WHAT IS CLAIMED IS:

1. A cooling roll for manufacturing a ribbon-shaped magnetic material by colliding a molten alloy to a circumferential surface of the cooling roll so as to cool and then solidify it, wherein the cooling roll has gas expelling means provided in the circumferential surface of the cooling roll for expelling gas entered between the circumferential surface and a puddle of the molten alloy.

2. The cooling roll as claimed in claim 1, wherein the cooling roll includes a roll base and an outer surface layer provided on an outer peripheral portion of the roll base, and said gas expelling means is provided in the outer surface layer.

3. The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is formed of a material having a heat conductivity lower than the heat conductivity of the structural material of the roll base at or around a room temperature.

4. The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is formed of a ceramics.

5. The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is formed of a material having a heat conductivity equal to or less than 80W m^{-1} K^{-1} at or around a room temperature.

6. The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is formed of a material having a coefficient of thermal expansion in the range of 3.5 - 18[$\times 10^{-6}K^{-1}$] at or around a room temperature.

7. The cooling roll as claimed in claim 2, wherein the average thickness of the outer surface layer of the cooling roll is 0.5 to 50μm.

8. The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is manufactured without experience of machining process.

9. The cooling roll as claimed in claim 1, wherein the surface roughness Ra of a portion of the circumferential surface where the gas expelling means is not provided is 0.05 - 5μm.

10. The cooling roll as claimed in claim 1, wherein the gas expelling means includes at least one groove.

11. The cooling roll as claimed in claim 10, wherein the average width of the groove is 0.5 - 90μm.

12. The cooling roll as claimed in claim 10, wherein the average depth of the groove is 0.5 - 20μm.

13. The cooling roll as claimed in claim 10, wherein the angle defined by the longitudinal direction of the groove and the rotational direction of the cooling roll is equal to or less than 30 degrees.

14. The cooling roll as claimed in claim 10, wherein the groove is formed spirally with respect to the rotation axis of the cooling roll.

15. The cooling roll as claimed in claim 10, wherein the at least one groove includes a plurality of grooves which are arranged in parallel with each other through an average pitch of 0.5 - 100μm.

16. The cooling roll as claimed in claim 10, wherein the groove has openings located at the peripheral edges of the circumferential surface.

17. The cooling roll as claimed in claim 10, wherein the ratio

of the projected area of the groove with respect to the projected area of the circumferential surface is 10 - 99.5%.

18. A ribbon-shaped magnetic material which is manufactured by using the cooling roll described in any one of claims 1 to 17.

19. The ribbon-shaped magnetic material as claimed in claim 18, wherein the average thickness thereof is 8 - 50μm.

20. A magnetic powder which is obtained by milling the ribbon-shaped magnetic material described in claim 18 or 19.

21. The magnetic powder as claimed in claim 20, wherein the magnetic powder is subjected to at least one heat treatment during or after the manufacturing process thereof.

22. The magnetic powder as claimed in claim 20, wherein the mean particle size of the powder is 1 - 300μm.

23. The magnetic powder as claimed in claim 20, wherein the magnetic powder has a composite structure composed of a hard magnetic phase and a soft magnetic phase.

24. The magnetic powder as claimed in claim 23, wherein the average crystal grain size of each of the hard magnetic phase and the soft magnetic phase is 1 - 100nm.

25. A bonded magnet which is manufactured by binding the magnetic powder described in any one of claims 20 to 24 with a binding resin.

26. The bonded magnet as claimed in claim 25, wherein the intrinsic coercive force (H_{cJ}) of the bonded magnet at a room temperature lies within the range of 320 - 1200 kA/m.

27. The bonded magnet as claimed in claim 25, wherein the

maximum magnetic energy product $(BH)_{max}$ of the bonded magnet is equal to or greater than $40kJ/m^3$.